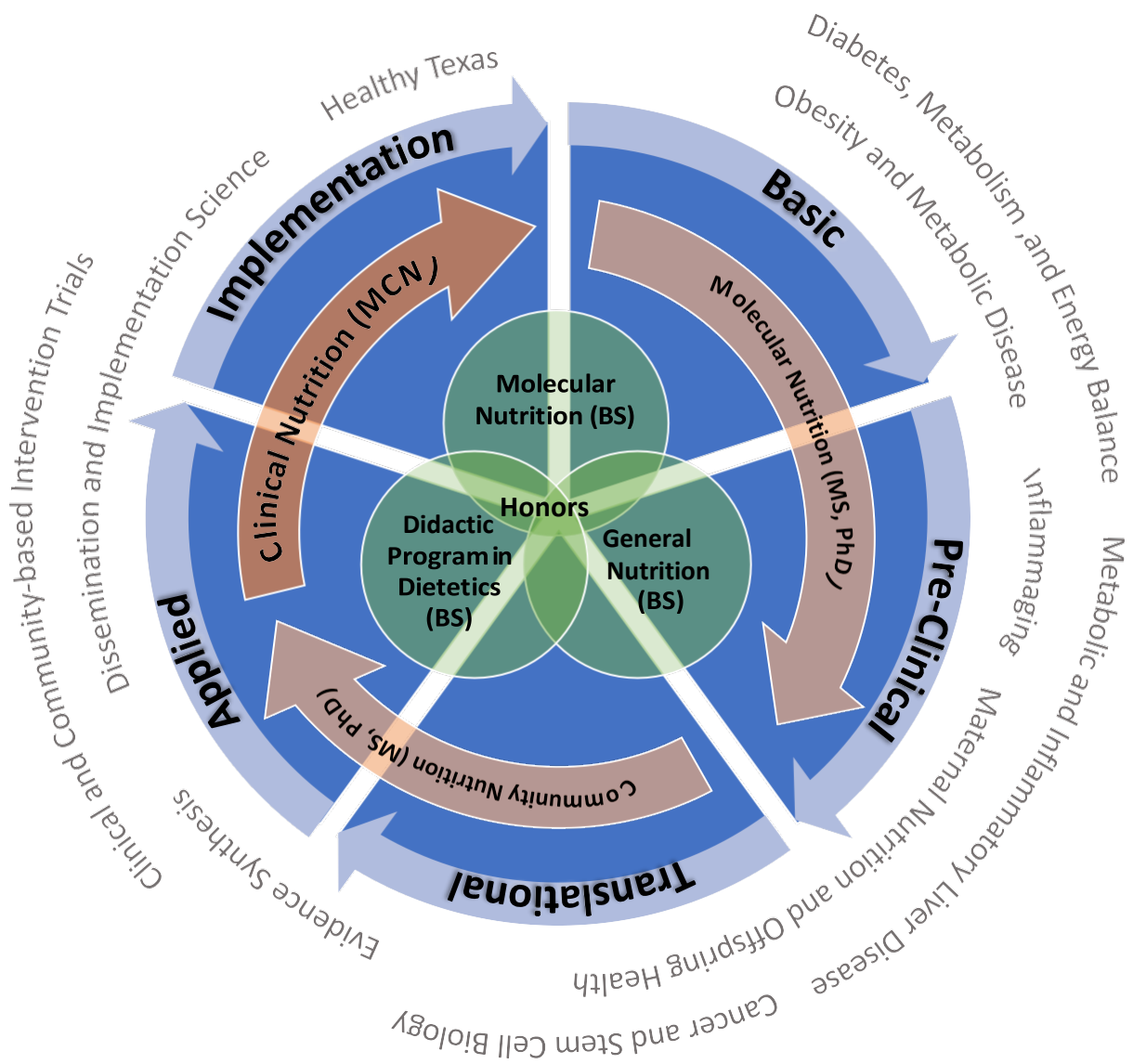




Department of Nutrition Texas A&M University

Strategic Plan 2021-2026



**INTRODUCTION**

The Department of Nutrition was established in January 2020 from the former Department of Nutrition and Food Science within the College of Agriculture & Life Sciences at Texas A&M University. The Department is largely housed in the 10,820 assignable square foot Cater-Mattil Hall. The Department is currently composed of 14.3 faculty (8.3 research-intensive tenure-track), only 11.3 of which have a teaching component, along with professional staff to assist with coordination of the graduate and professional programs, and teaching and research laboratory management.

<i>Title</i>	<i>Number</i>	<i>Totals</i>
<i>APT</i>		
Senior Lecturer	3	
Instructional Assistant Professor	1	
Research Assistant Professor	1	
<i>APT Subtotal</i>		5
<i>Tenured/Tenure-Track</i>		
Assistant Professor	1	
Associate Professor	5.3	
Professor	1	
Distinguished Professor	1	
<i>T/TT Subtotal</i>		8.3
<i>Extension</i>		
Professor	1	
<i>Extension Subtotal</i>		1
<i>Total Faculty</i>		14.3

The Department supports several academic programs ranging from bachelor's degrees in Nutrition to graduate degrees at the Masters and Doctoral level and a new Professional Masters of Clinical Nutrition tentatively launching in 2021.

<i>Category</i>	<i>Number</i>	<i>Totals</i>
<i>Undergraduate Students</i>		
General Nutrition	424	
Didactic Program in Dietetics	80	
Molecular Nutrition	4	
Honors Program	56	
<i>Undergraduate Subtotal</i>		508
<i>Graduate Students</i>		
MS	11	
PhD	27	
<i>Graduate Subtotal</i>		38
<i>Professional Students</i>		
Dietetic Internship	5*	
Master of Clinical Nutrition	In process**	
<i>Professional Subtotal</i>		5
<i>Postdoctoral Scholars</i>	8	8
<i>Total Trainees</i>		559

* Approved for 12 but only 5 currently due to COVID

** Anticipated to be 24 (12 at TAMU and 12 through a collaboration with Baylor Medical Center in Dallas)



Our strategic plan outlines an initial roadmap to guide future decisions as we set priorities for growth and to achieve our vision and mission. This vision is shaped, in part, by our view of the future of Nutrition and the 2020-2030 Strategic NIH Plan for Nutrition as well as initiatives from other agencies such as USDA, DOD, Gates Foundation and national/international organizations such as WHO and UNICEF with the goal of reducing the impact of disease by improving health through nutrition. Our over-arching goal, with the proper investment and diversification of faculty expertise and funding sources, is to strive for excellence in the emerging field of precision nutrition: 1) how does what we eat affect our health and disease trajectory?; 2) what and when should we eat to maintain optimal health?; 3) how do nutritional needs change across our lifespan?; and 4) how can nutritional interventions be improved to reduce the burden of disease in clinical and community settings (i.e. through Extension) and across the state/nation?

VISION

The Department of Nutrition (NUTR) aspires to become a top-ranked life and behavioral sciences department that advances the science, education, and application of evidence-based nutrition through excellence in education, discovery, scholarship, as well as extension-related service (translational), outreach and engagement to promote optimal health for Texans and the world.

MISSION

Through the advancement of the discipline of nutrition, the Department of Nutrition will:

- Serve as a global leader in undergraduate, graduate, and post-graduate training that prepares trainees for leadership roles in academia, clinics, industry, government, public health, and the nonprofit sector with the goal of improving evidence-based decision making around nutrition at all levels from research to application and policy.
- Discover new knowledge, technologies, and intervention strategies spanning basic to applied research that provides the foundation for precision nutrition that can be applied regionally, nationally, and internationally with the goal of improving human health and well-being through disease prevention and management.
- Engage society in the adoption and maintenance of dietary behaviors to mitigate health disparities and to improve the quality of life across the life span for individuals, communities, and populations, especially in Texas that has a majority-minority population and unique food systems.
- Participate in national and international policy initiatives aimed at reducing food insecurity and increasing value foods to bring recognition to Texas A&M while having a positive impact on human health beyond the borders of Texas.

GOALS

Serve as a global leader in undergraduate and graduate education, and post-graduate training that prepares trainees for leadership roles in academia, clinics, industry, government, public health, and the nonprofit sector.

1. Increase the number of upper-level undergraduate elective courses (300 and 400 level) from 3 to 10.
2. Increase undergraduate majors by 20%, with the majority of new students being in the Molecular Track.
3. Develop new MS options in applied nutrition and global nutritional health.
4. Increase the number of PhD students-to-faculty from 1.5:1 to 3:1.



5. Increase the number of post-doc scholars-to-faculty from 1:2 to 1:1.
6. Obtain a T32 training grant in Nutrition.

Discover new knowledge, technologies, and intervention strategies spanning basic to applied research that provides the foundation for precision nutrition that can be applied regionally, nationally, and internationally.

1. Increase the number of proposals submitted for external funding (federal and non-profit sources) by 20% annually.
2. Obtain an NIDDK P30 Nutrition Obesity Center grant.
3. Obtain at least one multi-PI grant focused on precision nutrition.
4. Obtain at least one international or foundation grant in food security and quality.
5. Actively collaborate with Children's Nutrition Research Center at Baylor College of Medicine through hosting new USDA hires to advance translational and clinical capabilities.

Engage society in the adoption and maintenance of dietary behaviors to mitigate health disparities and to improve the quality of life across the life span for individuals, communities, and populations.

1. Increase the number of Extension faculty with a research appointment from 0 to 3.
2. Increase the number of grant applications that include an Extension component by at least one per year.
3. Recruit an ACES Fellow to develop a program in health disparity research.
4. Actively participate and lead development of innovative new programs in the COALS-Bryan Collaboration to provide opportunity for more hands-on activities to engage students in experiential learning and population research.

Participate in national and international policy initiatives aimed at reducing food insecurity and increasing value foods.

1. Have one faculty member with charter membership on key policy bodies such as the Dietary Guideline Advisory Committee.
2. Have one faculty member on international advisory boards such as WHO or the Gates Foundation.
3. Organize and host an international symposium or think-tank on using healthy nutrition to address world health issues and improve quality of life.

The success of accomplishing these goals is dependent on hiring additional faculty as a critical mass is a prerequisite of all goals. Having more faculty increases the opportunity to increase graduate students and post-docs which, in turn, increases the Department's ability to be competitive for center grants, multi-PI grants, and T32 training grants. Additional faculty members will also increase our ability to offer more courses and to diversify research.

AREAS OF CURRENT ACADEMIC EXCELLENCE

- Didactic Program in Dietetics that is well-recognized for its academic rigor and its ability to prepare students for post baccalaureate training. In 2019, 92% of DPD students who applied for a dietetic internship were successfully matched. The pass rate greatly exceeds the 66% reported nationally.
- Dietetic Internship program that successfully prepares students to pass the examination for Registered Dietitian/Nutritionist on the first attempt. The first-time pass rate for the RDN exam at Texas A&M has



exceeded 95% for the past 5 years compared with the 69% first-time national pass rate nationally.

- Nutritional Sciences Honors Program that provides motivated students opportunities for broader, deeper and more complex learning experiences, in smaller groups and with enhanced faculty interaction.
- Strong undergraduate assessment program that emphasizes critical thinking, written communication, and data collection. Resulting assessment outcomes supported the curriculum modification, development and implementation of the NFSC 204 Perspectives in Nutrition to introduce nutrition students early in their academic careers to fundamental skills in critical appraisal of scientific literature and communication in nutrition and NFSC 481 Seminar course which is a capstone communications intensive course.
- Molecular nutrition lab course starting fall 2021 that will provide modern training in molecular and precision nutrition.
- High impact experiences in the entry level course NFSC 210 Horizons in Nutrition. Specific high impact experiences offered to students include Study Abroad Texas, Operation Lone Star, and promotion of undergraduate research through provision of undergraduate research scholarships.

AREAS OF CURRENT RESEARCH EXCELLENCE

Faculty in the Department are among the best funded in the College. Federal competitive funding for research ranks first in the College on a per-capita basis. Current funding averages over \$500K per year for faculty with a research component and the impact of their programs averages from $h=52$ for Professors to $h=36$ for Associate Professors and $h=15$ for Assistant Professors.

The Department has an outstanding track record in basic research in nutrition at the molecular level. Core areas of excellence include:

- Obesity and metabolic disease
- Cancer and stem cell biology
- Inflammaging
- Diabetes, metabolism, and energy balance
- Maternal nutrition and offspring health
- Metabolic and inflammatory liver disease

The Department has recently expanded expertise into translational and applied nutrition research including:

- Evidence synthesis
- Clinical and community-based intervention trials
- Dissemination and implementation science

This work can build upon the Extension Food and Nutrition unit's focus aimed at translating research into programs that help consumers adopt targeted behaviors that are linked to improved health and to reduction in chronic disease risk.

The discovery and application of new knowledge into how nutrition can improve human health requires a variety of research methods and tools. Research faculty utilize a variety of modern and cutting-edge tools through extensive interdisciplinary research programs. Research capabilities, assets, and infrastructure include:



- Non-invasive exfoliomics for personalized nutrition by prediction of host responsiveness to diet
- Accelerometry, point-of-care (POC) devices for cardiometabolic measures, and dermal carotenoid scanners
- Shared equipment
 - Seahorse extracellular flux (XF) analyzer
 - Leica TCS SPE confocal microscope
 - Leica Aperio slide scanner
 - Luminex multiplex reader
 - BD Accuri C6 Plus flow cytometer
 - Histology capabilities including tissue processor, tissue embedding console, cryostat, and microtome
 - Nikon Eclipse Ti inverted wide-field fluorescence microscope equipped with a Photometrics CoolSNAP HQ2 monochrome digital CCD, Lambert Instruments FLIM Attachment (LIFA) camera and a Nikon DS-Fi1 color camera
 - Nikon STORM Super-Resolution fluorescence microscope with a high power 4-line laser, H-TIRF/STORM illuminator control and a Nikon A1R-HD 25 confocal interface
 - Keyence BZX automated inverted fluorescence phase microscope.
 - Nikon AZ100 long working distance multizoom epi-fluorescence microscope.
 - Biorad S3e cell sorting flow cytometer.
 - Agilent 6890N gas chromatograph with 5975B electron impact mass spectrometer.
 - Columbus Instruments temperature-controlled Oxymax open-circuit indirect calorimeter
 - Echo MRI for body composition analysis
 - Beckman LS6500 liquid scintillation counter
 - Promethion in vivo metabolic screening system
 - Roche LightCycler 480 real-time PCR system
 - Roche LightCycler 96 real-time PCR system

AREAS OF CURRENT EXTENSION EXCELLENCE

- Successful track record of external funding from USDA and CDC.
- Practice-based education programs that are successful in helping individuals improve targeted diet-related behaviors specifically in chronic diseases such as diabetes and hypertension.
- Food safety education programs aimed at front-line foodservice employees are recognized by Texas Department of State Health Services and are implemented state-wide.
- Growing catalog of on-line education programs which enable 24/7 access to Extension education. Supporting growth through utilization of digital media through development of videos and social media to reach nontraditional audiences.
- Provides improved health and nutrition practices for limited-resource audience through both federal and state funded programs including the *Expanded Food and Nutrition Education Program* and the *Better Living for Texans*.

OPPORTUNITIES

- New collaborative projects with emphasis on precision nutrition, underserved populations (equity), and clinical and public health decision-making and policy (e.g. tNORC grant; CPRIT TREC grant; optimal systematic reviews and guidelines of all randomized trial data for weight and cardiometabolic risk reduction).



- Expanded collaborations including:
 - Application of precision nutrition through point of care instruments/devices that collect diet and health-related data (Engineering)
 - Precision nutrition across the life span (Medicine, Nursing, Public Health)
 - Nutrition-stem cell research (Genetics, Biology, Medicine)
 - Nutrition-Aging-Microbiome and impact on health (Biochemistry, Engineering, Statistics, Biology, Public Health, Veterinary Medicine, Medicine)
 - Social and behavioral aspects of nutrition (Psychology and Brain Science)
 - External partners within the USDA Children's Nutrition Research Center at Baylor College of Medicine, Institute for Biotechnology, Methodist Hospital in the Texas Medical Center
- ACES program to expand faculty in the area of applied/translational nutrition, particularly nutrition disparities.
- CPRIT Scholars program to recruit rising stars and established investigators in nutrition-based cancer prevention.
- Expansion of faculty, particularly those with a Registered Dietitian/Nutritionist credentials, to expand DPD courses to the graduate level.
- Contribute to international nutrition through optimal evidence synthesis research, advancing dietary guideline methods and through science-based agricultural development and training programs (*e.g.* NutriRECS research program, Borlaug Institute, Gates Foundation).
- New Master of Clinical Nutrition degree offers opportunities to increase graduate student enrollment and clinical partnerships with Baylor Medical Center in Dallas.
- Development of new technologies to monitor nutritional status in real time and algorithms to predict future health status and how nutritional changes will reduce disease risk.
- New academic collaborations with the Health Science Center through dual degree programs (RD/RN and/or RD/PA) and nutrition education in the MD programs that build on existing collaborations such as Operation Lone Star and other interprofessional activities.
- Redevelopment of the PhD program that is underway to embrace basic to applied training and foundational knowledge for all students that will position the program to compete for NIH T32 Training Grants.

CHALLENGES

- Faculty size is below a critical mass to support the current academic and research programs. Nutrition is primarily a transfer-in degree at the undergraduate level. Because of the small faculty size, the Department is not able to provide the in-person non-major courses that are central to recruiting students from outside of the College. By necessity the primary recruitment course has evolved into an asynchronously delivered MOOC-like course.
- The small faculty size has resulted in a lack of diversity in courses and upper-level electives required for a robust degree program.
- The small faculty size has greatly restricted growth of a robust PhD program. Few graduate courses are offered by faculty in the Department because of the demand to ensure undergraduate courses are offered.
- The placement of faculty at research and extension centers across the state could be leveraged to provide more extensive community and population health intervention and dissemination research opportunities, as well as urban settings in which undergraduate and graduate training opportunities could be greatly enhanced.



- There is a lack of balance in T/TT faculty ranks. The current research faculty is heavily weighted toward senior faculty, which does not make for a vibrant faculty. After 2021, the Department is likely to have less than 3 members below the rank of Professor.
- Lack of modern and sufficient quantity of research facilities consistent with the level of research excellence demonstrated by the faculty.
- Limited external visibility of programs and education opportunities external visibility due to dated web presence.

PRIORITIES

1. Increase tenure/tenure-track faculty in strategic areas, all with a teaching component. Faculty size benchmarks relative to student population should be based on those in similar NIH-centric departments within TAMU (Biochemistry) and those present in nutrition departments at our aspirational peers (Illinois, UNC, UC Davis, Cornell, Wisconsin). Current student-to-faculty ratio is 39:1, which is substantially less than that of TAMU average (23:1), college average (14:1), or at peer institutions (average 5:1). The immediate priority is to achieve a student-to-faculty ratio mirroring the university average (23:1), which will require 11 new faculty with a teaching component. To achieve full parity with TAMU peer departments will require recruiting an additional 12 new tenure/tenure-track faculty (14:1). The faculty size will need to be re-evaluated periodically to match changes in student numbers. New hires should be predominantly at the Assistant and Associate Professor levels to rebalance rank distribution. Focus should be on strategic hires that have synergy with current faculty and with expertise in areas that are absent in the college or university, ideally recruited in cluster hires. Immediate needs in order of priority for growth should fill deficits in:
 - Micronutrients
 - Nutritional disparities
 - Controlled metabolic studies
 - Nutritional/hormone/metabolic status sensing/wearables
 - Computational nutriomics/system biology
 - Dissemination and implementation
 - Food systems and policy
 - Nutrition and chronic disease prevention
 - Diet and the microbiome
2. Recruit an established investigator to develop a metabolic kitchen for dietary studies and other interventions in humans to examine biologic responses.
3. Transition the current non-major nutrition course from a MOOC format to an in-person experience with a smaller on-line option to accommodate distance learners and students in McAllen. This will require a minimum of 2 additional instructional faculty, and will assist with recruiting new majors.
4. Actively participate with the COALS-Bryan Collaboration to provide opportunity for more hands-on activities to engage students in experiential learning. This outreach collaboration will also improve recognition of the Department, assist in recruiting a diverse group of students into the undergraduate and graduate programs, and may assist in recruiting participants into future research efforts. This will require additional Extension and Applied Faculty.
5. Collaborate with Children's Nutrition Research Center at Baylor College of Medicine through hosting new USDA hires to advance translational and clinical capabilities.
6. Re-brand the Molecular Nutrition track to the Biomedical and Molecular Nutrition track to increase interest by pre-professional students.